

Response

Applicant: Gary B. Gordon et al.

Serial No.: 09/812,252

Filed: March 19, 2001

Docket No.: 10010189-1

Title: IMPEDANCE SENSING SCREEN POINTING DEVICE

REMARKS

This Response is responsive to the Office Action mailed March 10, 2004. In that Office Action, the Examiner rejected claims 1-10, 14-26, and 28-35 under 35 U.S.C. §103(a) as being unpatentable over Ferrari et al., U.S. Patent No. 6,392,636 ("Ferrari") in view of Kuroda, U.S. Patent No. 6,376,947 ("Kuroda") and Hsu et al., U.S. Patent No. 6,134,340 ("Hsu"). Claims 11-13 and 27 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ferrari in view of Kuroda and Hsu, and further in view of Aroyan et al., U.S. Patent No. 6,163,313 ("Aroyan").

With this Response, Applicant respectfully traverses the Examiner's rejection of claims 1-35. Claims 1-35 remain pending in the application and are presented for reconsideration and allowance.

Claim Rejections under 35 U.S.C. §103

The Examiner rejected claims 1-10, 14-26, and 28-35 under 35 U.S.C. §103(a) as being unpatentable over Ferrari et al., U.S. Patent No. 6,392,636 ("Ferrari") in view of Kuroda, U.S. Patent No. 5,376,947 ("Kuroda") and Hsu et al., U.S. Patent No. 6,134,340 ("Hsu"). Independent claim 1 includes the following limitations:

the controller configured to generate pixel values representing the portion of the tip of the digit placed against the sensing elements based on the sensed electrical property at each of the sensing elements, the controller configured to generate movement data based on a comparison of successively generated sets of the pixel values, the comparison including comparing a first one of the sets with at least one pixel shifted version of a second one of the sets, the movement data indicative of motion of the tip of the digit across the sensing elements.

With respect to independent claim 1, the Examiner acknowledged that "Ferrari does not disclose a controller configured to generate movement data based on a comparison of successively generated sets of values." (Office Action at para. no. 3, page 3). The Examiner also acknowledged that "Ferrari does not teach generation of pixel values and a comparison such that the comparison includes 'comparing a first one of the sets with at least one pixel shifted version of a second one of the sets'." (Office Action at para. no. 3, page 4).

The Examiner indicated that it would have been obvious to modify Ferrari to include

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Kuroda's comparing/calculating circuit 50. (Office Action at para. no. 3, page 3). However, there is no teaching or suggestion in Kuroda that the comparing/calculating circuit 50, or any other circuit disclosed therein, is "configured to generate movement data based on a comparison of successively generated sets of the pixel values, the comparison including comparing a first one of the sets with at least one pixel shifted version of a second one of the sets" as recited in claim 1.

The Examiner also indicated that it would have been obvious to modify Ferrari to incorporate Hsu's fingerprint correlator processor 18. (Office Action at para. no. 3, page 4). However, there is no teaching or suggestion in Hsu that the correlator processor 18, or any other circuit disclosed therein, is "configured to generate movement data based on a comparison of successively generated sets of the pixel values, the comparison including comparing a first one of the sets with at least one pixel shifted version of a second one of the sets" as recited in claim 1. Rather, Hsu discloses that the fingerprint correlator processor 18 is used to correlate a fingerprint image with a previously stored reference image to verify a person's identity. (See, e.g., Hsu at col. 6, line 17 to col. 7, line 23). There is no teaching or suggestion in Hsu that the fingerprint correlator processor 18 is configured to generate movement data as recited in claim 1.

There is also no teaching or suggestion in the cited prior art to combine Ferrari, Kuroda, and Hsu, as proposed by the Examiner. As the Federal Circuit has stated, "[i]n holding an invention obvious in view of a combination of references, there must be some suggestion, motivation, or teaching in the prior art that would have led a person of ordinary skill in the art to select the references and combine them in the way that would produce the claimed invention." *Karsten Manufacturing Corp. v. Cleveland Golf Co.*, 58 U.S.P.Q.2d 1286, 1293 (CAFC 2001). The Examiner stated that:

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ferrari's input system to include Kuroda's comparing/calculating circuit (50). One would have been motivated in view of the suggestion in Kuroda that the comparing/calculating circuit (50) equivalently provides the desired comparison of successively generated sets of values. The use of comparing/calculating circuit helps function a touch-type input terminal apparatus as taught by Kuroda. (Office Action at para. no. 3, page 3) (emphasis added).

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The Examiner's statement that "[o]ne would have been motivated in view of the suggestion in Kuroda that the comparing/calculating circuit (50) equivalently provides the desired comparison of successively generated sets of values" appears to simply repeat the Examiner's contention that Kuroda teaches or suggests limitations of the claims, and does not identify any suggestion to combine the references in the manner proposed by the Examiner. The Examiner's statement that the comparing/calculating circuit 50 disclosed in Kuroda "helps function" the apparatus disclosed in Kuroda, does not teach or suggest that the comparing/calculating circuit 50 could or should be used to replace a system that determines the position of a finger by calculating the centroid of a sensed "blob" as disclosed in Ferrari.

Ferrari discloses that movement information is generated based on the current position of a finger. The position of the finger is determined by calculating the centroid of a sensed "blob" in an image representing the finger. If the position of the finger is near the top of the array 3, the cursor is moved up. If the position of the finger is near the bottom of the array 3, the cursor is moved down. (See, e.g., Ferrari at Abstract; col. 1, lines 53-56; col. 4, lines 10-15; col. 4, lines 33-37; col. 5, lines 10-63; col. 8, lines 38-44; col. 9, lines 19-61; col. 10, lines 38-50; col. 11, lines 10-40). Ferrari includes no teaching or suggestion that movement information could or should be generated in any other manner, such as by a technique like that disclosed in Kuroda, or by any other technique. Similarly, Kuroda includes no teaching or suggestion that the comparing/calculating circuit 50 disclosed therein could or should be used to replace a system that determines the position of a finger by calculating the centroid of a sensed blob as disclosed in Ferrari. In fact, the combination suggested by the Examiner would render meaningless large portions of the disclosure of Ferrari, including those portions directed to determining the position of a finger, and moving the cursor based on the sensed position. (See, e.g., Ferrari at Figures 5A-5I, 6, 7, 8, and 9, and corresponding description).

With respect to combining Ferrari and Hsu, the Examiner stated that:

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ferrari's capacitive touchpad system to incorporate Hsu's Fingerprint correlator processor (18). One would have been motivated in view of the suggestion in Hsu that the correlator processor (18) as configured in Fig. 1 and as demonstrated in Fig. 14 equivalently provides the desired comparison of pixels with pixels that are shifted. The use of correlator processor helps function a capacitive fingerprint

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sensor as taught by Hsu et al. (Office Action at para. no. 3, page 4) (emphasis added).

The Examiner's statement that "[o]ne would have been motivated in view of the suggestion in Hsu that the correlator processor (18) as configured in Fig. 1 and as demonstrated in Fig. 14 equivalently provides the desired comparison of pixels with pixels that are shifted" appears to simply repeat the Examiner's contention that Hsu teaches or suggests limitations of the claims, and does not identify any suggestion to combine the references in the manner proposed by the Examiner. The Examiner's statement that the correlator processor disclosed in Hsu "helps function" the apparatus disclosed in Hsu, does not teach or suggest that the correlator processor could or should be used to replace a system that determines the position of a finger by calculating the centroid of a sensed blob as disclosed in Ferrari.

In view of the above, Ferrari, Kuroda, and Hsu, either alone, or in combination, do not teach or suggest each and every limitation of independent claim 1. The Applicant respectfully requests removal of the rejection of claim 1 under 35 U.S.C. § 103(a), and requests allowance of this claim. Since dependent claims 2-10, 14-18, 32, and 33 further limit patentably distinct claim 1, claims 2-10, 14-18, 32, and 33 are believed to be allowable over the cited references, and allowance of claims 2-10, 14-18, 32, and 33 is respectfully requested.

Independent claim 19 includes the limitation "correlating at least one version of a first one of the digital images with at least one version of a second one of the digital images to generate motion data indicative of motion across the sensing elements by the appendage". The Examiner acknowledged that "Ferrari does not disclose a controller configured to generate movement data based on a comparison of successively generated sets of values." (Office Action at para. no. 3, page 3). Ferrari also does not teach or suggest correlating at least one version of a first one of the digital images with at least one version of a second one of the digital images to generate motion data indicative of motion across the sensing elements by the appendage as recited in independent claim 19. Rather, as described above with reference to claim 1, Ferrari discloses that movement information is generated based solely on the current position of a finger.

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With respect to Kuroda, the Examiner stated that:

Regarding claim 19, in addition to what has been discussed above, Kuroda discloses a data adjusting circuit (52) to which previous movement data Δx_1 , and Δy_1 are outputted (step S65) and also alternatively movement data Δx_2 , Δy_2 are outputted (S67) so that adjustment of movement data takes place based on area data. See Fig. 3 and Col. 5, lines 17-24. It would have been obvious that the data adjusting circuit (52) is equivalent to the desired correlation of versions of images. (Office Action at para. no. 3, page 4).

There is no teaching or suggestion in Kuroda that the data adjusting circuit (52) is configured for “correlating at least one version of a first one of the digital images with at least one version of a second one of the digital images to generate motion data indicative of motion across the sensing elements by the appendage” as recited in independent claim 19. The Examiner appears to acknowledge that Kuroda does not explicitly teach or suggest correlating versions of images as recited in claim 19, as the Examiner stated that Kuroda’s data adjusting circuit (52) is “equivalent to” the correlation of versions of images. However, as stated in the Manual of Patent Examining Procedure, “[i]n order to rely on equivalence as a rationale supporting an obviousness rejection, the equivalency must be recognized in the prior art, and cannot be based on applicant’s disclosure or the mere fact that the components at issue are functional or mechanical equivalents.” MPEP § 2144.06. In this case, the Examiner has not provided any support to show that a data adjusting circuit 52 that simply scales a received set of movement data by a factor, α , (see, e.g., Kuroda at col. 5, lines 25-40) is recognized in the art as being equivalent to correlating at least one version of a first one of the digital images with at least one version of a second one of the digital images to generate motion data, as recited in independent claim 19.

It is not clear whether the Examiner is relying on Official Notice, or the concept of inherency, in the rejection of claim 19. However, as indicated in the Manual of Patent Examining Procedure, “[o]fficial notice unsupported by documentary evidence should only be taken by the examiner where the facts asserted to be well-known, or to be common knowledge in the art are capable of instant and unquestionable demonstration as being well known.” MPEP § 2144.03(A). “It would not be appropriate for the examiner to take official notice of facts without citing a prior art reference where the facts asserted to be well known are not capable of instant and unquestionable demonstration as being well known.” *Id.*

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(emphasis in original). Applicant contends that the limitations in claim 19 that the Examiner appeared to indicate were not explicitly taught or suggested by Kuroda are not well known facts that are capable of instant and unquestionable demonstration as being well known.

It is also not inherent in Kuroda that the data adjusting circuit 52, or any other circuit, correlates versions of images as recited in claim 19. As the Federal Circuit has stated, “[i]nherent anticipation requires that the missing descriptive material is ‘necessarily present,’ not merely probably or possibly present, in the prior art.” *Trintec Indus., v. Top-U.S.A. Corp.*, 63 USPQ2d 1597, 1599 (Fed. Cir. 2002) (quoting *In re Robertson*, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999)). It is not inherent in Kuroda that the data adjusting circuit 52 correlates versions of images. Rather, the data adjusting circuit 52 simply scales a received set of movement data by a factor, α . It is not necessary to correlate versions of images to scale a set of movement data.

The Examiner indicated that it would have been obvious to modify Ferrari to incorporate Hsu’s fingerprint correlator processor 18. (Office Action at para. no. 3, page 4). However, there is no teaching or suggestion in Hsu that the correlator processor 18, or any other circuit disclosed therein, is configured for “correlating at least one version of a first one of the digital images with at least one version of a second one of the digital images to **generate motion data indicative of motion across the sensing elements by the appendage**” as recited in claim 19 (emphasis added). Rather, Hsu discloses that the fingerprint correlator processor 18 is used to correlate a fingerprint image with a previously stored reference image to verify a person’s identity. (See, e.g., Hsu at col. 6, line 17 to col. 7, line 23). There is no teaching or suggestion in Hsu that the fingerprint correlator processor 18 is configured to correlate images to generate motion data as recited in claim 19. There is also no suggestion to combine Ferrari, Kuroda, and Hsu, as described above with respect to claim 1.

In view of the above, Ferrari, Kuroda, and Hsu, either alone, or in combination, do not teach or suggest each and every limitation of independent claim 19. The Applicant respectfully requests removal of the rejection of claim 19 under 35 U.S.C. § 103(a), and requests allowance of this claim. Since dependent claims 20-26, 28-31, 34, and 35 further limit patentably distinct claim 19, claims 20-26, 28-31, 34, and 35 are believed to be

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allowable over the cited references, and allowance of claims 20-26, 28-31, 34, and 35 is respectfully requested.

The Examiner rejected claims 11-13 and 27 under 35 U.S.C. §103(a) as being unpatentable over Ferrari in view of Kuroda and Hsu, and further in view of Aroyan et al., U.S. Patent No. 6,163,313 ("Aroyan"). Claims 11-13 are dependent on independent claim 1. As described above with respect to claim 1, Ferrari, Kuroda, and Hsu do not teach or suggest the limitations "the controller configured to generate movement data based on a comparison of successively generated sets of the pixel values, the comparison including comparing a first one of the sets with at least one pixel shifted version of a second one of the sets", as recited in claim 1. Aroyan also does not teach or suggest these limitations of claim 1. Claim 27 is dependent on independent claim 19. As described above with respect to claim 19, Ferrari, Kuroda, and Hsu do not teach or suggest the limitations "correlating at least one version of a first one of the digital images with at least one version of a second one of the digital images to generate motion data indicative of motion across the sensing elements by the appendage", as recited in claim 19. Aroyan also does not teach or suggest these limitations of claim 19. Since dependent claims 11-13 and 27 further limit patentably distinct claim 1 or claim 19, claims 11-13 and 27 are believed to be allowable over the cited references, and allowance of claims 11-13 and 27 is respectfully requested.

In addition, dependent claims 11-13 and 27 include limitations that are not taught or suggested by the cited prior art, and are further distinguishable from the cited prior art. Claim 11 includes the limitation "further comprising a conductive rim formed around a perimeter of the plurality of sensing elements." Claims 12 and 13 are dependent on claim 11. Claim 27 includes the limitation "wherein a conductive rim is formed around a perimeter of the plurality of sensing elements." Claim 27 also includes the limitation "driving the conductive rim with an alternating current signal". The Examiner has acknowledged that "Ferrari does not teach a conductive rim along with alternating current signal source for driving the conductive rim." (Office Action at para. no. 3, page 6). Kuroda and Hsu also do not teach or suggest a conductive rim formed around a perimeter of a plurality of sensing elements, or driving the conductive rim with an alternating current signal. With respect to Aroyan, the Examiner stated that "Aroyan on the other hand teaches a conductive coating (730) serving two functions one of which is the conductive coating (730), being driven by AC driving

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signals that are applied to four corner electrodes.” (Office Action at para. no. 3, page 6). However, there is no teaching or suggestion in Aroyan that the conductive coating 730 is a rim that is formed around a perimeter of a plurality of sensing elements. Ferrari, Kuroda, Hsu, and Aroyan, either alone or in combination, do not teach or suggest a conductive rim formed around a perimeter of a plurality of sensing elements as recited in claims 11 and 27. The cited references also do not teach or suggest an automatic gain controller coupled to an alternating current signal source for controlling the magnitude of the alternating current signal as recited in claim 13.

There is also no suggestion to combine Aroyan and Ferrari in the manner proposed by the Examiner. As the Examiner has acknowledged, there is no teaching or suggestion in Ferrari regarding a conductive rim. Aroyan discloses a touch sensitive screen, and includes no teaching or suggestion regarding generating movement data for a screen pointer or controlling the position of a screen pointer. There is no teaching or suggestion in Aroyan that any of the techniques disclosed therein could or should be used in a touchpad for providing screen pointer control, such as the touchpad disclosed in Ferrari. There is no teaching or suggestion in Aroyan that the conductive coating 730 could or should be used in a touchpad for providing screen pointer control, such as the touchpad disclosed in Ferrari.

Ferrari, Kuroda, Hsu, and Aroyan, either alone or in combination, do not teach or suggest each and every limitation of dependent claims 11-13 and 27. The Applicant respectfully requests removal of the rejection of claims 11-13 and 27 under 35 U.S.C. § 103(a), and requests allowance of these claims.

Allowable Subject Matter

In light of the above, Applicant believes independent claims 1 and 19 and the claims depending therefrom, are in condition for allowance. Allowance of these claims is respectfully requested.

CONCLUSION

Any inquiry regarding this Amendment and Response should be directed to Jeff A. Holmen at the below-listed telephone number or Pamela Lau Kee at Telephone No. (408)

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553-3059, Facsimile No. (408) 553-3063. In addition, all correspondence should continue to be directed to the following address:

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CERTIFICATE UNDER 37 C.F.R. 1.8:

The undersigned hereby certifies that this paper or papers, as described herein, are being deposited in the United States Postal Service, as first class mail, in an envelope address to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 10th day of June, 2004.

By Jeff A. Holmen
Name: Jeff A. Holmen